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SUSQUEHANNA RIVER BASIN COMMISSION  
5012 LENKER STREET  
MECHANICSBURG, PENNSYLVANIA 17055

INFORMATION REPORT  
ON THE  
STEWARTSTOWN SEWAGE TREATMENT PLANT

JANUARY 9, 1975









## TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION.....	1
Purpose.....	1
Description.....	1
Acknowledgements.....	2
II. SUMMARY.....	3
III. DISCUSSION.....	6
IV. RECOMMENDATIONS.....	7





# I

## INTRODUCTION

Purpose: To inform the Commissioners of the Susquehanna River Basin Commission (SRBC) of the status of the Stewartstown Sewage Treatment Plan, Stewartstown, Pennsylvania.

Description: The Stewartstown Sewage Treatment Plant discharges treated effluent into Ebaughs Creek, an interstate tributary to Deer Creek in Maryland. The treatment plant, designed for 0.4 MGD, is located approximately 1.9 miles upstream on Ebaughs Creek from the Pennsylvania-Maryland border. Ebaughs Creek extends about 1.0 mile in Maryland to its confluence with Deer Creek. The Department of Natural Resources (DNR), State of Maryland, requested that the SRBC review the effect of the treatment plant discharge on the waters of Ebaughs Creek and Deer Creek. The SRBC staff review resulted in the issuance of a statement in support of the Stewartstown treatment plant at the public hearing held on September 25, 1974 by the U.S. Environmental Protection Agency (EPA). Subsequent to the hearing, EPA issued the NPDES permit, for the period October 30, 1974 to October 31, 1977, with the following effluent limitations:

Parameter	<u>Average Effluent Concentrations</u>	
	30 Consecutive Day Period	7 Consecutive Day Period
BOD (mg/l)	10	15
SS (mg/l)	10	15



Parameter	<u>Average Effluent Concentrations</u>	
	30 Consecutive Day Period	7 Consecutive Day Period
Fecal Coliform (MPN/100 ml)		200
pH		6-9
DO (mg/l)		5
NH <sub>3</sub> (mg/l)		2.5
P (mg/l)	2	3
Total Cl <sub>2</sub> (mg/l)		0.2 0.02*

\* Concentration one-half mile downstream from discharge point.

Acknowledgements: Information contained in this report was obtained during a joint visit to the Stewartstown Sewage Treatment Plant by personnel of the SRBC and Pennsylvania Department of Environmental Resources (DER). The following individuals were present:

(1) SRBC

Charles Takita  
Thomas Franklin  
Stanley Rudisill

(2) DER

Jeffrey Beatty, Environmental Protection Specialist,  
Harrisburg Regional Office, DER  
Ron Hughey, Biologist, Harrisburg Regional Office, DER

(3) Stewartstown Plant

R. L. Weaver, Primary Operator (Certified)  
Thomas Wierman, Assistant Operator (Awaiting Certification)





## II

### SUMMARY

A joint visit to the Stewartstown Sewage Treatment Plant was made on December 30, 1974 by personnel of SRBC and DER as listed on the preceding page. A summary of the findings follows:

Mr. R. L. Weaver, a certified treatment plant operator employed by William E. Sacra and Associates, Consulting Engineers, is the primary operator of the Stewartstown Sewage Treatment Plant.

Mr. Thomas Wierman, is the plant operator employed by the Stewartstown Borough Authority. Mr. Wierman has received notification that he is scheduled to take his examination for certification during mid-January (exact date could not be recalled).

The hook-up of individual homes began in November during which time the treatment unit was allowed to fill. The treatment plant currently serves a population of 100 (total population is 1,100) and the flows to the treatment plant vary between 7,000 and 10,000 gallons per day. Discharge of effluent to Ebaughs Creek is intermittent and began during the first week of December. The final filter pumps are float controlled and operate approximately three minutes every 30-45 minutes. Only one of the two treatment units is in operation.

Operational records were limited, but results of sample



analysis conducted on December 9, 1974 were as follows:

	<u>Influent</u>	<u>Effluent</u>
BOD (mg/l)	172	12.06
Suspended Solids (mg/l)	155	9
Phosphorus (mg/l)	2.4	0.099
Ammonia (mg/l)	75	62.5

Tests conducted by the DER personnel for pH and total Cl<sub>2</sub> in the treatment plant showed the following:

	<u>Chlorine Contact Chamber</u>	<u>Final Effluent</u>
pH	4.0	4.4
Total Cl <sub>2</sub>		0.1

Mr. Weaver, the treatment plant operator, stated the chlorine residuals have been maintained at approximately 0.15 and that the pH had been ranging from about 7.2 in the influent to about 6.8 in the effluent. He further stated that it was the first time that the low pH had been recorded. One possible reason for the low pH may be caused by excess amounts of alum which is used for phosphorus removal. The plant operator has been having trouble with liquid alum continuously flowing through the chemical feed pump to the aeration tank even when the chemical feed pump is not in operation.

This low pH may be one of the causes of very low ammonia removal in that biological activity is depressed by the low pH.





Visual inspection also showed very little bacterial mass present which is necessary for proper biological treatment.

It was noted during the inspection that chlorination was being temporarily accomplished in the wet well just prior to filtration rather than in the chlorine contact chamber. It appeared that there was sufficient contact time in the wet well in that the filter pumps were operated by floats for about three minutes every 30-45 minutes. No bacteriological data were available at the time of visit. The DER personnel collected samples for bacteriological analysis.

It was also noted that the chlorine feed was controlled by a timing device set to feed chlorine for 45 minutes and stop for 15 minutes. The SRBC staff was under the impression, through conversation with the consultant during meetings held prior to issuance of the permit, that a pneumatic control was to be installed to regulate chlorine dosage according to the flow. The DER inspector recommended pneumatic controls.

Ebaughs Creek, the receiving stream, was also surveyed. The temperature, pH and DO readings taken during the survey were as follows:

	<u>Above Discharge</u>	<u>50 Ft. Below Discharge</u>	<u>½ Mile Downstream</u>
Temperature (°C)	8.0		8.3
pH	7.1	5.2	6.3



	<u>Above Discharge</u>	<u>50 Ft. Below Discharge</u>	<u>½ Mile Downstream</u>
DO (mg/l)	11.0		10.8
Total Cl <sub>2</sub> (mg/l)			Less than 0.1*

\* Minimum concentration determined by the field kit was 0.1 mg/l.

A quick visual survey by the DER biologist indicated a healthy stream. Retrieval of biological samples one-half mile downstream from the discharge showed stonefly nymphs one-half inch long. The samples were taken to the DER laboratory for detailed study. DER conducted a detailed stream survey before the treatment plant began operating and on two other occasions after the plant start-up. Another detailed survey is planned for February 1975. Results of all field and laboratory studies concerning the Stewartstown Sewage Treatment Plant was requested.

### III

#### DISCUSSION

The following deficiencies found in the treatment plant were noted by the DER personnel for corrective action:

1. Low pH in the treatment plant and effluent, and
2. Chlorine feed control.

It was noted that the ammonia concentrations were considerably in excess of the NPDES permit effluent limitation. The single result seen at the treatment plant showed 62.5 mg/l ammonia.





The plant operator indicated that the results averaged about 50 mg/l. Discussion with the DER personnel revealed that they were not enforcing the NPDES permit requirements concerning ammonia. The reason given for this was that no special limitation was set for ammonia under the DER permit and DER has no legal basis for enforcing the NPDES permit because the Commonwealth of Pennsylvania has not been granted authority for administering the NPDES permit program.

#### IV

#### RECOMMENDATIONS

It is recommended that:

- (1) The Stewartstown Borough Authority and EPA be notified by the SRBC that the NPDES limitation for ammonia concentration in the effluent is not being met and that appropriate measures should be taken to bring the effluent within the NPDES permit requirements.
- (2) The primary operator employed by the consulting engineer be present at the treatment plant on a continuing basis until such time as the effluent satisfies the requirements of the NPDES permit.
- (3) All actions necessary to correct the pH be taken as soon as possible.



(4) The faulty chemical feed pump which allows addition of excessive amounts of alum be repaired or replaced.

(5) The timing device used to control chlorine feed be replaced with a pneumatic control.

(6) The SRBC suggest that the DER procure field equipment to measure chlorine residuals of 0.02, if available, in order to determine compliance or noncompliance with the NPDES permit for Stewartstown.











